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VERTEBRATE FAUNA ALONG THE MARCHAGEE TRACK, WESTERN AUSTRALIA

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ABSTRACT

The results of a survey in 1978-79 of the vertebrate fauna in the vicinity of the Marchagee Track are presented, together with a brief description of the vegetation along the Track at the time. Seven native mammal, 88 bird, four amphibian and 16 reptile species were recorded. This list is compared with that of two nearby sites, Cockleshell Gully and Marchagee Nature Reserve.

INTRODUCTION

The Marchagee-Hill River Road, commonly known as the Marchagee Track, is located approximately 230km north of Perth. It forms part of the boundary between the shires of Coorow and Dandaragan. Since 1953 much of the Badgingarra sandplain, through which the Marchagee Track runs, has been cleared (Fig. 1) and developed for wheat and sheep farming - a process that is continuing. Exploration for various minerals in the area has raised the possibility of extra clearing occurring. Any reduction of natural vegetation will increase the importance of Nature Reserves (including Game Reserves) and National Parks in the area as refuges for native animals.

To date no information is available on the vertebrate fauna of the area although surveys have been conducted at Marchagee Nature Reserve (Dell *et al.* 1979), 20km north-east, and at Cockleshell Gully (Chapman *et al.* 1977), 40km north-west. The principal objective of the present survey was to document the vertebrate fauna along the Marchagee Track, an area which contains two large National Parks (Watheroo and Badgingarra) and a major Game Reserve (Pinjarrega).

METHODS

The vegetation along the Track was examined in August, September and October 1979 and seven formations were recognized. Lists of prominent plant species in each were compiled.

Mammals were trapped using pit-fall and Elliott live-traps between 27 November and 2 December 1978, 2-10 May, 2-10 August and 13-16 September 1979 (3360 trap-nights) in two areas of scrub-heath (Fig. 1, sites A,B). Between 12-15 August 1980 traps were set in wandoo woodland and in heath (180 trap-nights altogether, sites C,D). Sightings of various species along the entire Track during these periods were also recorded.

Observations on the avifauna were made in October 1977, May, June, July, September, December 1978, January, March, April, May, July, August, September, October, November 1979. Observations were made in all vegetation types along the entire length of the Track although Yhi Pastoral Lease (42km west of the Midlands Road) was surveyed more intensively than other areas.

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Reptiles and frogs were collected during the mammal trapping periods and on 11 and 19 October and 15-16 November 1979 in pit-fall traps, by head-torching at night, and by hand during the day. Specimens were lodged with the Western Australian Museum (accession numbers R67422-32). All vegetation formations were sampled along the whole length of the Track.

Fish were searched for in the lake in Watheroo National Park and Lake Pinjarrega but were not found (see Halse 1981).

The extent of the survey area is not easily defined because observations were made with different intensities at irregular intervals along the length of the Track. However, it is probably reasonable to regard the area surveyed as being 1km either side of the Track, which included about 8,000ha natural vegetation (Fig. 1).

RESULTS

VEGETATION

The Marchagee Track transects the Le Suer and Marchagee vegetation systems of the Irwin Botanical District. Beard (1979) recognized five vegetation formations along the Track. For the purpose of describing vertebrate utilization of the vegetation along the Track, two additional formations have been included here, i.e. lakes and disturbed areas.

A brief description of each formation is given below.

1. Heath

A dense formation of low shrubs to 1m in the Le Suer system dominated by *Melaleuca urceolaris* and *Dryandra* spp. with scattered emergent blackboys *Xanthorrhoea reflexa* (to 2m) and a ground layer featuring Cyperaceae and Restionaceae on lateritic soils. Patches of mallee *Eucalyptus leptopoda* occur occasionally in the heath.

2. Scrub-heath

This formation occurs in both the Le Suer and Marchagee systems and is characterized by a two-layered shrubland, with the upper layer open and growing to 2m, and the lower layer closed and 1m tall. The prominent species in the Le Suer system, growing on deep white sand, include *Adenanthos cygnorum*, *Banksia attenuata*, *B. sphaerocarpa*, *Conospermum triplinervium*, *Grevillea biformis*, *G. leucopteris*, *Hakea costata*, *H. preissii* and *Xylomelum angustifolium*. Prominent species in the Marchagee system include *Adenanthos strictus*, *Actinostrobos arenarius*, *Banksia attenuata*, *B. prionotes*, *Acacia cyanophylla*, *A. spathulifolia*, *Grevillea polybotrya* and *Xylomelum angustifolium* growing on deep yellow sand.

3. Banksia low woodland

With respect to the Marchagee Track, this formation occurs towards the eastern boundary of the Le Suer system and is characterized by trees less than 3m tall of *Banksia attenuata*, *B. menziesii*, *B. prionotes*, *Eucalyptus todtiana* and *Nuytsia floribunda* with a dense shrub layer less than 1m tall containing the same species as scrub-heath.

4. Eucalypt woodland

This formation occurs on both the Le Suer and Marchagee systems and is characterized by open trees 10-30m tall and an open shrub layer to 1.5m. Three associations were recognized:

a) Powder bark woodland

Eucalyptus accedens woodland with shrub species *Bossiaea eriocarpa*, *Diplolaena microcephala*, *Hibbertia teretifolia* and *Rhagodia* sp. on dissected laterite over clay.

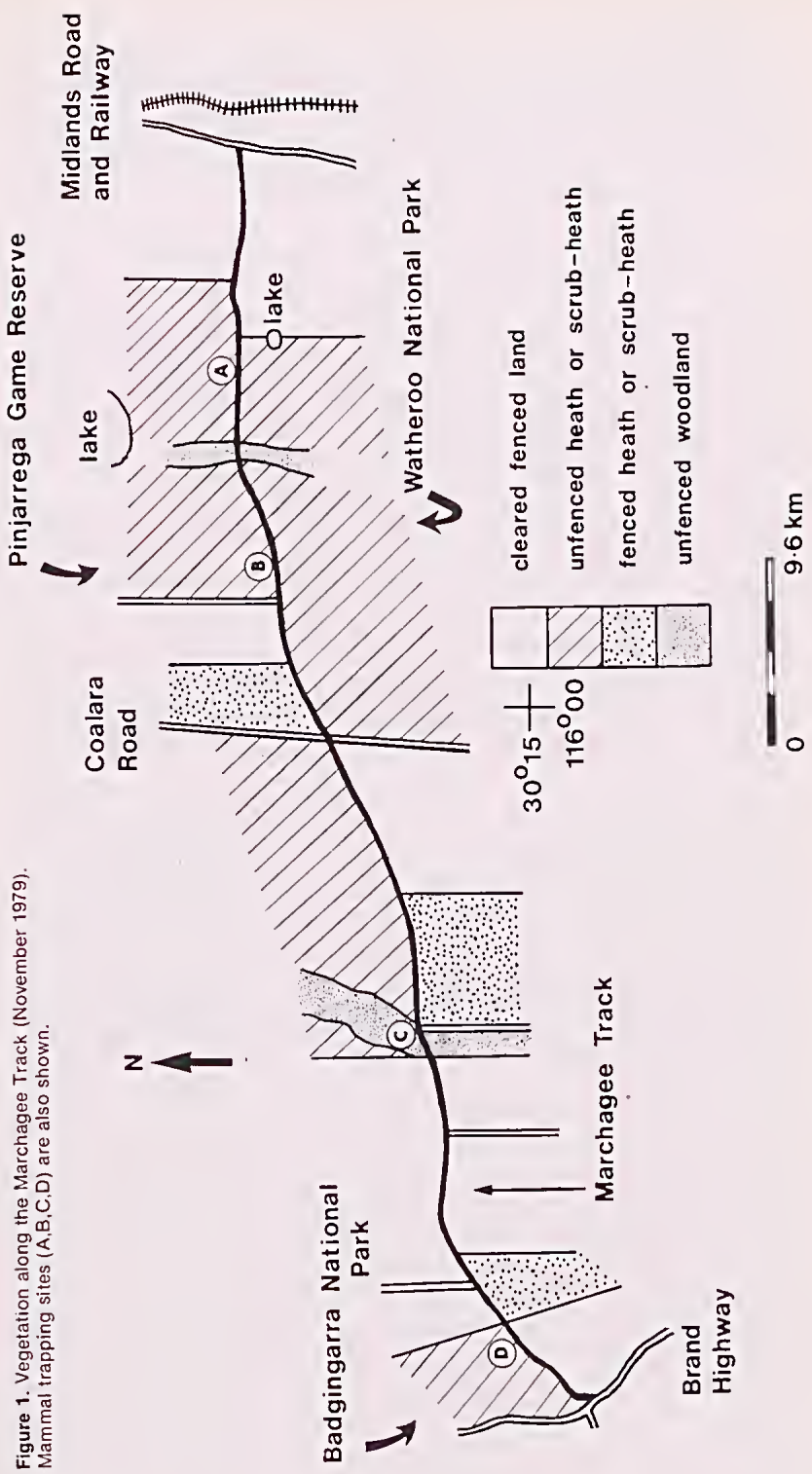
b) Wandoo woodland

Eucalyptus wandoo woodland with shrub species *Acacia* sp., *Calothamnus quadrifidus*, *Casuarina campestris*, *Macrozamia riedlei* and *Melaleuca urceolaris* on ferruginous loam over laterite.

c) York gum woodland

Eucalyptus loxophleba woodland with *Acacia cyanophylla* and *A. microbotrya*; *A. spathulifolia* and *Scholtzia capitata* are dominant in the ecotone around the woodland. *Eucalyptus camaldulensis* occurs in floodways in York gum woodland. This association grows on loamy sand.

Figure 1. Vegetation along the Marchagee Track (November 1979). Mammal trapping sites (A,B,C,D) are also shown.



5. **Samphire**
In the vicinity of the Marchagee Track this formation only occurs in the Marchagee vegetation system around salt or brackish lakes. Dominant species include *Eucalyptus loxophleba*, *E. salmonophloia*, *E. foecunda* and *Casuarina obesa* trees to 10m and *Melaleuca* spp.
6. **Lakes**
Brackish and salt lakes contain the skeletons of dead trees and a single aquatic macrophyte *Lamprothamnium papulosum*. Some *Casuarina obesa* trees become flooded when water levels rise.
7. **Disturbed Areas**
Areas that have been either partially or completely cleared with only occasional trees remaining.

Approximately 40% of the natural vegetation adjacent to the Marchagee Track had been cleared for crops and pasture by 1978-79. Of the remaining 60%, 31% was fenced and has either been cleared since then or is likely to be cleared in the near future. Most of the unfenced, uncleared land is made up of Watheroo National Park, Pinjarrega Game Reserve and part of Badgingarra National Park. A large portion of Badgingarra National Park at the western end of the Marchagee Track was burnt in May 1979. Very little regeneration of vegetation had occurred by November 1979.

MAMMALS

Seven native and four introduced species of mammal were recorded. Most trapping was done in scrub-heath; some species of small mammal present in other vegetation formations may not have been trapped. No effort was made to catch bats and more bat species were present than were identified.

ANNOTATED LIST

Western Grey Kangaroo (*Macropus fuliginosus*) — Commonly seen crossing Marchagee Track in the early morning or at dusk where natural vegetation occurred on at least one side of the Track. Also seen feeding in crops at dusk in August and September. Sightings in May and August were of family groups (1 adult male, 1 adult female and 1 young at heel) while during December sightings of single adults were most common.

Western Brush Wallaby (*Macropus irma*) — Three seen crossing Marchagee Track into scrub-heath in Watheroo National Park during August and one road kill found in wandoo woodland.

Common Dunnart (*Sminthopsis "murina"*). — One female pit-trapped in August in wandoo woodland.

Fat-tailed Dunnart (*Sminthopsis crassicaudata*) — One male pit-trapped in scrub-heath in December. Two were found in August 1978 during ploughing operations on Yhi Pastoral Lease.

Ash-grey Mouse (*Pseudomys albocinereus*) — Trapped during December (0.71% trap success rate), May (1.56%) and August (0.66%) at both scrub-heath trapping sites. Females in December were lactating and appeared to have just given birth. Males in August had scrotal testes and an average weight of 31g.

White-striped Mastiff-bat (*Tadarida australis*) — Common around farm sheds at night.

Echidna (*Tachyglossus aculeatus*) — Characteristic diggings and faeces in York gum woodland.

House Mouse (*Mus musculus*) — Trapped in both scrub-heath areas during December (0.22% trap success rate) and May (0.52%). Common in disturbed areas around farm sheds during the day.

European Rabbit (*Oryctolagus cuniculus*) — Not commonly sighted along Marchagee Track but plentiful in cleared paddocks at night.

Fox (*Vulpes vulpes*) — One seen crossing Marchagee Track and two seen in cleared paddocks in August.

Domestic Cat (*Felis catus*) — One seen crossing Marchagee Track in May.

¹ A recent taxonomic revision showed that *S. "murina"* consists of several species (Kitchener et al. 1984); it is not known which species was recorded during this study.

BIRDS

Eighty-eight species were recorded along the Track, including fourteen species of waterbird which were seen only in Lake Pinjarrega or the lake in Watheroo National Park. It is possible that the Blue-breasted Fairy-wren also occurred in the area. Details of the species recorded are presented in Table 1 in the following format: abundance, months in which recorded, habitat, general information. Abundance was categorized as scarce (S), uncommon (U), moderately common (MC) or common (C), based on numbers of the species and how conspicuous an element of the avifauna it was.

HERPETOFAUNA

Twenty species of frog and reptile were collected, a lower number than expected. Further sampling should reveal more species. Information on those that were found is presented in Table 2 in the following format: family and species, months in which recorded, habitat, general information.

DISCUSSION

A total of 11 mammal, 88 bird and 20 reptile and frog species was recorded along the Marchagee Track in an area approximately 8000ha. Except for the herpetofauna and bats, the number of species recorded along the Track was similar to that recorded at Cockleshell Gully (Chapman & Kitchener 1977, Dell & Chapman 1977, Dell & Johnstone 1977) and Marchagee Nature Reserve (Chapman & Kitchener 1979, Dell 1979, Dell & Chapman 1979) when allowance is made for the different sizes of the survey areas.

Seven species of native mammal were recorded. Of these, the occurrence of the Western Brush Wallaby is of particular interest because the Marchagee Track is possibly at the eastern end of this species' range in the northern sandplain. It was recorded in the Cockleshell Gully survey (Chapman & Kitchener 1977) but not on Marchagee Nature Reserve (Chapman & Kitchener 1979). The Western Australian Museum has a specimen from the Hill River district, dated 1958, and a 1913 specimen from Moora, 60km south of the Marchagee Track. The species probably has a reasonably widespread but sparse distribution in the region, being restricted to areas with dense vegetation.

The White-striped Mastiff-bat was not recorded at Cockleshell Gully or Marchagee Nature Reserve although it occurs over most of the southern portion of Australia (Ride 1970) and almost certainly was present in both areas. Similarly, the Echidna was not recorded during the Cockleshell Gully survey although K.D.M. and S.A.H. saw one in the vicinity in May 1978. The Western Grey Kangaroo, Ash-grey Mouse and Fat-tailed Dunnart were recorded in all three surveys.

Although it was not recorded, the Honey Possum (*Tarsipes rostratus*) probably occurs along the Marchagee Track, which supports large areas of scrub-heath dominated by *Banksia attenuata* and *B. prionotes* that, along with myrtaceous species, ensure a year-round supply of nectar. Honey Possums were found at Cockleshell Gully and Marchagee Nature Reserve. Similarly, records from the Western Australian Museum indicate that Gould's Wattle Bat (*Chalinolobus gouldii*), Chocolate Bat (*C. morio*), Little Bat (*Eptesicus regulus*) and Lesser Long-eared Bat (*Nyctophilus geoffroyi*) have been recorded in the vicinity of the Track and would probably have been found in a more intensive survey.

Forty-five species of passerine and 43 species of non-passerine bird were recorded along the Track. Seventeen of these were not recorded at Cockleshell Gully (Dell & Johnstone 1977) or Marchagee Nature Reserve (Dell 1979). Eight were waterbirds associated with the extensive lake systems at the eastern end of the Track (Darter, Freckled Duck, Blue-winged Shoveler, Pink-eared Duck, Hardhead, Blue-billed Duck, Musk Duck, Coot). The other nine species were Australian Bustard, Australian Dotterel, Bush Stone-curlew, Fan-tailed Cuckoo, Jacky Winter, White-eared Honeyeater, White-naped Honeyeater, Crimson Chat and Zebra Finch. All these species were within their recognized ranges and were exhibiting normal habitat preferences (Serventy & Whittell 1976, Blakers *et al.* 1984), although the Australian Dotterel, White-naped Honeyeater, Crimson Chat, Zebra Finch and perhaps the White-eared Honeyeater probably occur only sporadically along the Marchagee Track.

Table 1. Bird species recorded along the Marchagee Track. Nomenclature follows Storr and Johnstone (1979).

Species	Abundance	Months Recorded	Habitat	General Information
Emu (<i>Dromaius novaehollandiae</i>)	MC	Jun, Jul, Aug, Sep, Nov, Dec	banksia low woodland, paddocks, scrub-heath	chicks in Sep 1978 and Nov 1979
Hoary-headed Grebe (<i>Podiceps poliocephalus</i>)	MC	Mar, Aug, Sep, Oct, Nov	brackish and salt-water lakes	
Little Black Cormorant (<i>Phalacrocorax sulcirostris</i>)	S	Aug, Sep, Oct	brackish lake	single birds
Darter (<i>Anhinga melanogaster</i>)	S	Jan	salt-water lake	one bird
Pacific Heron (<i>Ardea pacifica</i>)	U	Aug, Sep	roadside pools	single birds
White-faced Heron (<i>Ardea novaehollandiae</i>)	U	Aug, Sep, Nov	brackish and salt-water lakes	single birds
Black Swan (<i>Cygnus atratus</i>)	C	Jan, Mar, Aug	brackish and salt-water lakes	large numbers on open water in Lake Pinjarrega
Freckled Duck (<i>Strickonetta naevosa</i>)	S	Jan	salt-water lake	3 birds seen. Dead bird found in Lake Eganu (20km north of Marchagee Track) in May 1979
Mountain Duck (<i>Tadorna tadornoides</i>)	C	Jan, Mar, Aug, Sep, Oct, Nov	brackish and salt-water lakes	large numbers on open water in Lake Pinjarrega
Black Duck (<i>Anas superciliosa</i>)	MC	Jan, Mar, Aug, Sep, Nov	brackish and salt-water lakes	
Grey Teal (<i>Anas gibberifrons</i>)	C	Jan, Mar, Aug, Sep, Oct, Nov	brackish and salt-water lakes	
Blue-winged Shoveler (<i>Anas rhynchos</i>)	U	Jan, Aug, Sep	brackish and salt-water lakes	
Pink-eared Duck (<i>Malacorhynchus membranaceus</i>)	MC	Jan, Mar, Aug, Sep, Oct	brackish and salt-water lakes	
Hardhead (<i>Aythya australis</i>)	MC	Jan, Aug, Sep, Oct, Nov	brackish and salt-water lakes	
Blue-billed Duck (<i>Oxyura australis</i>)	MC	Aug, Sep	brackish lake	
Musk Duck (<i>Biziura tobata</i>)	U	Jan	salt-water lake	several in Lake Pinjarrega
Black-shouldered Kite (<i>Elanus caeruleus</i>)	S	Aug	aerial over cleared paddocks	one bird
Little Eagle	U	Mar, Aug	aerial over samphire and	single birds

Wedge-tailed Eagle (<i>Aquila audax</i>)	U	Aug, Nov, Dec	aerial over banksia low woodland, scrub-heath	single birds and pairs
Brown Falcon (<i>Falco berigora</i>)	U	Aug, Sep, Oct	aerial over disturbed areas, heath, scrub-heath	single birds
Australian Kestrel (<i>Falco cenchroides</i>)	MC	Apr, Aug, Sep, Nov	aerial over disturbed areas, heath, scrub-heath	single birds
Stubble Quail (<i>Coturnix novaezelandiae</i>)	U	Apr	paddocks	2 birds
Coot (<i>Fulica atra</i>)	C	Jan, Mar, Aug, Sep, Oct, Nov	brackish and salt-water lakes	large numbers seen on open water
Australian Bustard (<i>Otis australis</i>)	S	Oct, Nov	paddocks, roadsides	single birds and pairs
Banded Plover (<i>Vanellus tricolor</i>)	MC	Jun, Jul, Sep, Oct, Nov	paddocks	nest with 3 eggs in Oct, chicks in Sep and Oct
Black-fronted Plover (<i>Charadrius melanops</i>)	S	Sep, Oct, Nov	brackish lake	pair seen regularly at edge of lake in Watheroo National Park
Australian Dotterel (<i>Peltophyas australis</i>)	S	Jul, Aug	paddocks	one bird July 1978, pair Aug 1979
Black-winged Stilt (<i>Himantopus himantopus</i>)	C	Jan, Mar, Jul, Aug, Sep, Nov	brackish and salt-water lakes	more common in salt lake, flocks of up to 30
Banded Stilt (<i>Cladorhynchus leucocephala</i>)	U	Sep	salt-water lake	flock of 20 seen in Lake Pinjarrega
Bush Stone-curlew (<i>Burhinus grallarius</i>)	S	Aug		calls heard
Common Bronzewing (<i>Phaps chalcoptera</i>)	MC	Apr, May, Aug Sep, Nov	disturbed areas, heath, powder bark and York gum woodlands, scrub-heath	usually single birds
Crested Pigeon (<i>Ocyphaps lophotes</i>)	C	Apr, May, Jul, Aug, Sep, Oct, Nov	disturbed areas, powder bark and wandoo woodlands, scrub-heath	single birds and groups of up to 10
Regent Parrot (<i>Polytelis anthopeplus</i>)	S	May, Sep	banksia low woodland	3 birds Sep 1978, 7 birds May 1979
Ring-necked Parrot (<i>Platycercus zonarius</i>)	C	Apr, Jun, Jul, Sep, Oct, Nov	banksia low woodland, disturbed areas, powder bark woodland	usually groups of 2-4
Carnaby's Cockatoo (<i>Calyptorhynchus latirostris</i>)	U	Aug, Sep, Nov	banksia low woodland, scrub- heath	flocks of up to 12
Galah (<i>Cacatua roseicapilla</i>)	C	Apr, Jun, Jul, Aug, Sep, Oct, Nov	paddocks (crop), lakes, powder bark, wandoo and York gum woodlands	
Pallid Cuckoo (<i>Cuculus pallidus</i>)	MC	Aug, Sep	banksia low woodland, paddocks, powder bark woodland	single birds
Fan-tailed Cuckoo (<i>Cuculus flabelliformis</i>)	S	Jul	powder bark woodland	one bird

Species	Abundance	Months Recorded	Habitat	General Information
Black-eared Cuckoo (<i>Chrysocolaptes oscularis</i>)	U	Sep, Oct, Nov	samphire, scrub-heath	single birds or pairs
Horsfield's Bronze Cuckoo (<i>Chrysocolaptes basalii</i>)	MC	Aug, Sep	banksia low woodland, powder bark and wandoo woodlands, samphire	single birds
Boobook Owl (<i>Ninox novaeseelandiae</i>)	S	Aug		calls heard
Tawny Frogmouth (<i>Podargus strigoides</i>)	S	May	banksia low woodland	one bird seen in <i>E. totitiana</i> tree
Australian Owllet-nightjar (<i>Aegotheles cristatus</i>)	S	Nov	wandoo woodland	one bird
Rainbow Bee-eater (<i>Merops ornatus</i>)	U	Oct, Nov	aerial, powder bark and York gum woodlands	several birds Nov 1978, single birds Oct and Nov 1979
White-backed Swallow (<i>Cheramoeca leucosterna</i>)	MC	Apr, Aug, Sep	aerial, roadsides, banksia low woodland	single birds or pairs along roadsides and feeding flocks of up to 10 over banksia low woodland
Welcome Swallow (<i>Hirundo neoxena</i>)	C	Apr, Jun, Aug Sep, Oct	aerial, paddocks, buildings, lakes	feeding flocks of up to 20 over paddocks and lakes, nest with 3 eggs in farm shed in Aug
Tree Martin (<i>Hirundo nigricans</i>)	C	Mar, Apr, Jul, Aug, Sep, Oct	aerial, disturbed areas, banksia low woodland, lakes, powder bark woodland	feeding flocks of up to 20
Richard's Pipit (<i>Anthus novaeseelandiae</i>)	C	Apr, May, Jun, Jul, Aug, Sep, Oct, Nov	disturbed areas	large numbers occur, especially in paddocks, but seen singly or in pairs
Black-faced Cuckoo-shrike (<i>Coracina novaehollandiae</i>)	MC	Jul, Aug, Sep, Oct, Nov	powder bark, wandoo and York gum woodlands	single birds
White-winged Triller (<i>Lalage suevii</i>)	U	Aug, Sep, Oct	paddocks, powder bark woodland	single birds and groups of 2-3
Jacky Winter (<i>Microeca leucophaea</i>)	U	Sep	heath, powder bark woodland	single birds or pairs
Red-capped Robin (<i>Petroica goodenovii</i>)	MC	Mar, Apr, Jun, Aug, Sep, Oct, Nov	heath, lakes, powder bark and York gum woodlands	one group of 3 (one adult male), otherwise pairs
Hooded Robin (<i>Petroica cucullata</i>)	MC	Apr, Sep, Nov	banksia low woodland	one group of 3 (including adult and juvenile male), otherwise pairs
Rufous Whistler (<i>Pachycephala rufiventris</i>)	MC	Apr, Jun, Aug, Sep, Oct	powder bark and York gum woodlands, samphire	single birds
Grey Shrike-thrush	MC	Apr, Aug, Sep	banksia low woodland, powder bark woodland	single birds

Crested Bellbird (<i>Oreocica gutturalis</i>)	U	Apr, Sep	banksia low woodland, powder bark woodland	seen in Apr 1979, calls heard in Sep 1979
Grey Fantail (<i>Rhipidura fuliginosa</i>)	C	Apr, Jun, Jul, Sep	powder bark and York gum woodlands, samphire	single birds
Willie Wagtail (<i>Rhipidura leucophrys</i>)	C	Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov	disturbed areas, banksia low woodland, powder bark and York gum woodlands, samphire, scrub-heath	single birds or pairs
Western Flycatcher (<i>Gerygone fusca</i>)	MC	Aug, Sep	powder bark, wandoos and York gum woodlands	single birds Aug 1979, calls heard Sep 1979
Weebill (<i>Smicrorornis brevirostris</i>)	MC	Jun, Aug, Sep, Oct	powder bark, wandoos and York gum woodlands, samphire	groups of 2-4
Broad-tailed Thornbill (<i>Acanthiza apicalis</i>)	MC	Sep, Oct, Nov	wandoos and York gum woodlands, samphire	usually groups of 2-4
Chestnut-rumped Thornbill (<i>Acanthiza uropygialis</i>)	MC	Sep, Oct	samphire	groups of 2-6
Western Thornbill (<i>Acanthiza inornata</i>)	MC	Apr, Sep, Oct	banksia low woodland, powder bark and wandoos woodlands	single birds or groups of 2-3
Yellow-rumped Thornbill (<i>Acanthiza chrysorrhoa</i>)	C	Apr, Sep, Oct, Nov	banksia low woodland, heath, powder bark and York gum woodlands, samphire	single birds or groups of 2-3. In heath occurred in <i>E. leptopoda</i> thickets
Redthroat (<i>Pyrholaemus brunneus</i>)	U	Aug, Nov	York gum woodland, samphire	single bird in York gum woodland, pair in <i>Melaleuca</i> shrubs in samphire
Calamanthus (<i>Sericornis fuliginosus</i>)	U	Nov	samphire	4 birds in <i>Melaleuca</i> shrubs and <i>C. obesa</i> trees at edge of lake
Variigated Fairy-wren (<i>Malurus lamberti</i>)	MC	Sep, Oct, Nov	samphire	groups of 4-8, usually in <i>Melaleuca</i> shrubs
Blue-breasted Fairy-wren (<i>Malurus pulcherrimus</i>)	?			possible sightings of birds in banksia low woodland and powder bark woodland
White-winged Fairy-wren (<i>Malurus leucopterus</i>)	MC	May, Oct, Nov	disturbed areas, heath, scrub-heath	groups of 2-4, often in quite open habitats
Striated Pardalote (<i>Pardalotus striatus</i>)	MC	Apr, Aug, Sep, Oct	banksia low woodland, powder bark, wandoos and York gum woodlands	single birds or pairs
Grey-breasted White-eye (<i>Zosterops lateralis</i>)	MC	Sep, Oct	banksia low woodland, York gum woodland, samphire	single birds and groups of 2-3
Brown Honeyeater (<i>Lichmera indistincta</i>)	C	Apr, Jul, Aug, Sep, Oct, Nov	banksia low woodland, heath, powder bark, wandoos and York gum woodlands, samphire, scrub-heath	common in all habitats but particularly abundant in heath during Aug while feeding on flowering <i>Dryandra</i> spp.

Species	Abundance	Months Recorded	Habitat	General Information
Singing Honeyeater (<i>Meliphaga virescens</i>)	MC	Apr, Aug, Sep	banksia low woodland	single birds or pairs
White-eared Honeyeater (<i>Meliphaga leucoflis</i>)	S	Nov	samphire	4 birds seen in C. obesa trees and large <i>Melaleuca</i> shrubs near lake in Watheroo National Park
Brown-headed Honeyeater (<i>Melithreptus brevirostris</i>)	U	Apr, Aug	banksia low woodland, powder bark woodland	groups of up to 8
White-naped Honeyeater (<i>Melithreptus lunatus</i>)	U	Oct, Nov	banksia low woodland	single birds and groups of 3
White-cheeked Honeyeater (<i>Phylidonyris nigra</i>)	C	Apr, Aug, Sep, Oct	banksia low woodland, heath, scrub-heath	single birds and groups of up to 3, Juveniles in Sep and Oct
Tawny-crowned Honeyeater (<i>Phylidonyris melanops</i>)	C	Apr, Aug, Sep, Oct, Nov	banksia low woodland, heath, scrub-heath	single birds and pairs, Juveniles in Sep and Oct
Yellow-throated Miner (<i>Manorina flavigula</i>)	S	Aug	powder bark woodland	2 birds
White-fronted Chat (<i>Epthianura albigrons</i>)	C	Apr, May, Jun, Jul, Aug, Sep, Oct	paddocks	small groups
Crimson Chat (<i>Epthianura tricolor</i>)	U	May, Oct	paddocks	sporadic occurrence, small flocks in Oct 1977 and May 1978
Zebra Finch (<i>Poephila guttata</i>)	U	Aug	powder bark woodland	2 birds seen, others heard
Magpie-lark (<i>Grallina cyanoleuca</i>)	MC	Aug, Sep, Nov	lakes, paddocks, powder bark woodland	usually single birds
Black-faced Woodswallow (<i>Artamus cinereus</i>)	C	Apr, May Jun Jul, Sep, Oct, Nov	aerial, disturbed areas, banksia low woodland, scrub-heath	single birds and groups of up to 8 birds
Grey Butcherbird (<i>Cracticus torquatus</i>)	S	Aug	powder bark woodland	one bird
Pied Butcherbird (<i>Cracticus nigrogularis</i>)	U	Aug, Sep	powder bark woodland	single birds
Australian Magpie (<i>Cracticus tibicen</i>)	MC	Jul, Aug, Sep, Nov	banksia low woodland, disturbed areas	single birds and groups of up to 4
Little Crow (<i>Corvus bennetti</i>)	S	Sep	wandoo woodland	one bird
Australian Raven (<i>Corvus coronoides</i>)	C	Apr, May, Jul, Aug, Sep, Oct	banksia low woodland, disturbed areas, powder bark and York gum woodlands, samphire	

Table 2. Reptiles species recorded along the Marchagee Track.

Family and species	Months recorded	Habitat	General Information
LEPTODACTYLIDAE			
<i>Heleioporus eyrei</i>	Sep, Nov	scrub-heath	7 collected
<i>Heleioporus albopunctatus</i>	Aug	scrub-heath	one collected
<i>Neobatrachus pelobatoides</i>	Sep	scrub-heath	6 collected
<i>Pseudophryne guentheri</i>	Aug	scrub-heath	one collected
GEKKONIDAE			
<i>Diplodactylus michaelsoni</i>	Dec	York gum woodland	one on <i>E. camaldulensis</i> tree
<i>Gehyra variegata</i>	Oct	wandoo and York gum woodlands	3 collected, 7 seen on dead trunks of <i>E. loxophleba</i>
PYGOPODIDAE			
<i>Lialis burtonis</i>	Oct	scrub-heath	2 collected
AGAMIDAE			
<i>Ctenophorus maculatus griseus</i>	Oct, Nov	scrub-heath	12 collected, most from firebreaks or other disturbed areas in scrub-heath
<i>Ctenophorus minor</i>	Oct, Nov	scrub-heath	2 collected
<i>Tympanocryptis adelaidensis</i>	Oct	scrub-heath	2 collected
<i>Moloch horridus</i>	Aug, Sep, Dec	scrub-heath	one collected, 3 seen
SCINCIDAE			
<i>Cryptoblepharus plagiocephalus</i>	Oct	wandoo and York gum woodlands	6 collected on trees
<i>Ctenotus fallens</i>	Oct	York gum woodland	one collected on dead <i>Casurina</i> tree
<i>Ctenotus p. pantherinus</i>	Oct	scrub-heath	one collected
<i>Lerista elegans</i>	Aug	York gum woodland	one collected under litter
<i>Tiliqua rugosa</i>	May, Aug, Oct, Nov, Dec		6 collected crossing Marchagee Track, others seen
<i>Tiliqua occipitalis</i>	Aug		one seen
VARANIDAE			
<i>Varanus gouldii</i>	Dec		one collected in gravel pit
ELAPIDAE			
<i>Rhinoplocephalus gouldii</i>	Nov	scrub-heath, York gum woodland	one collected from dead blackboy stump, one seen in litter in woodland
<i>Pseudonaja nuchalis</i>	Dec	disturbed areas	4 seen

From the avian point of view the two most interesting habitats along the Marchagee Track were the extensive areas of heath and scrub-heath which supported large numbers of honeyeaters, as well as other birds, and the lake systems at the eastern end of the Track. These contained large numbers of aquatic birds, including eight species of waterfowl. Many other birds occurred around the margins of the lakes in the samphire vegetation formation.

All 20 species of reptile and frog collected along the Marchagee Track were recorded at either Cockleshell Gully or Marchagee Nature Reserve. Nine species of reptile and three frog species that were recorded at both these sites were not found along the Track, although it seems highly likely they occur there. The Marchagee Track herpetofauna consists of a mixture of coastal and wheatbelt species, as does that of Marchagee Nature Reserve (Dell & Chapman 1979).

CONCLUSIONS

A total of 115 native vertebrate species was recorded along the Marchagee Track during this survey; four introduced mammal species were also present. Although many of the native species venture into farmland at times, most of them require areas of uncleared land for persistence along the Track. Fortunately all the natural vegetation types found along the Marchagee Track occur in the National Parks and Nature Reserves in the area, although the proportion of wandoo and powder bark woodlands in these areas is very low. Intuitively, the size of the existing reserves and their diverse vegetation characteristics suggest that they should be adequate to preserve the present vertebrate faunal assemblage even if most other land along the Track is cleared. It will be interesting to see whether this turns out to be the case, especially with respect to species that utilize wandoo and powder bark woodlands.

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ARBOREAL GECKOS FEEDING ON PLANT SAP

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Several individuals of the gecko *Gehyra variegata* may be captured from the same position on the trunks of shrubs. This observation was made after dusk during a population study of this species and *Oedura reticulata* at Konnongorring in the wheatbelt about 150 km north-east of Perth, Western Australia (How and Kitchener 1983).

Further investigations of these aggregations in November 1984 revealed that they occurred on Jam (*Acacia acuminata*) where fresh sap was exuding from crevices in the trunk. On 13 November during a three hour period nine *Gehyra* were collected from the same position. Observation with a headtorch showed that they were licking and drinking the clear, fresh exudation. Four of the seven adult females were gravid.

Aggregations of three or more animals on *Acacia acuminata* were recorded on four different occasions in November 1983, twice in March 1985 and once in December 1984, January 1984 and 1985 and February 1982. In all but one instance, females outnumbered males (total animals - 47 female, 36 male); however, on 24 November 1983 one aggregation consisted of only six males.

The breeding season for *Gehyra* at Konnongorring is late-October to February (unpublished data) and there is evidence that a female produces more than one single-egg clutch. The sap may provide the geckos with more energy with which they can catch protein-rich arthropods. A high protein diet during this period may facilitate rapid growth in yolky ovarian follicles and oviducal eggs and may be necessary for production of successive clutches.

When *Gehyra* that had been feeding on sap were handled they released large amounts of dark treacly faecal material. The production of similar faeces by *Oedura reticulata* has been noted, suggesting that they may also feed on some sugary substances.

On 13 January 1985 an *Oedura* was observed capturing a de-alate queen *Camponotus* ant on the trunk of a Gimlet tree, *Eucalyptus salubris*. However the gecko was disturbed and it was not possible from observation to determine whether that species actually eats ants. *Camponotus* ants were common on trunks of Gimlet trees. They are mainly nocturnal and some are known to gather honey-dew and nectar which regurgitate to be stored in the distended crops of special worker ants in nests below ground (Brown and Taylor 1970). The possibility that *Oedura* may induce the ants to regurgitate upon capture is worth investigation.

Several authors (e.g. Scott 1981, Lamont 1983) have commented on ants feeding on nectar produced by extrafloral nectaries on native plants. It is possible that these extrafloral nectaries may be harvested by geckos also.

The Marbled Gecko, *Phyllodactylus marmoratus*, is frequently recorded among the blossom of Marri, *Eucalyptus calophylla*, during February and March in the south-west of Western Australia. I have not determined whether they feed on nectar or on insects attracted by the blossoms. *Phyllodactylus* will lick and dissolve portions of sugary sweets left uncovered (T.F. Houston, pers. comm.).

All published detailed studies on Australian geckos (Pianka and Pianka 1976, and Bustard 1968, 1971) and our unpublished studies as well as general texts indicate that their food items are exclusively arthropods. These studies have been based on analysis of stomach contents composed of solid material; the presence of sap or nectar in stomach fluids would thus have been ignored. A reappraisal of the diet of arboreal Australian geckos is warranted.